

# Case report: Adverse effects of taking tricyclic antidepressants and smoking marijuana

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**R**oung people with psychiatric disorders are now being treated more often with medications and antidepressants than with counseling. This case report analyzes the interactions of marijuana and amitriptyline (a tricyclic antidepressant used for depression, insomnia, and sometimes associated anxiety) in a 17-year-old boy. A case report by Wilens and associates<sup>1</sup> highlights the association between smoking marijuana and taking amitriptyline, causing transient cognitive changes and delirium.

This article concerns a life-threatening, sustained supraventricular tachycardia while a patient was using these two drugs.

## Case report

A 17-year-old boy who lives in a chaotic household cannot sleep and feels depressed. He takes 25 mg of amitriptyline at night to help him sleep and alleviate some of his depression; he avoids taking benzodiazepines because of their potential for dependency. There is no history of congenital or acquired heart disease. He takes no other medications but admits to using marijuana occasionally.

One week after he was prescribed amitriptyline, the patient arrived at the emergency department at noon with a supraventricular tachycardia rate of 300 beats per minute (**Figure 1**), which had lasted for 24 hours. He had been smoking marijuana the evening and night before (about 12 hours before coming to the emergency department). A thorough search of his family home by his father and talking with his peers confirmed no other drug or alcohol involvement. He freely admitted to using marijuana before the onset of his "racing heartbeat" and was taking his recently prescribed amitriptyline. This was the first time he had noticed a racing heartbeat serious enough to visit the emergency department.

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He had been dabbling with marijuana and taking amitriptyline simultaneously the week before, but the preceding evening he had "partied out" quite heavily on marijuana. There was no smell of alcohol on his breath, and he was coherent and well oriented, despite the tachycardia. After he was stabilized and given an intravenous dose of verapamil (without success), he was transferred to the intensive care unit for electroconversion to sinus rhythm (**Figure 2**).

## Discussion

This case report illustrates what can happen when marijuana and amitriptyline (tricyclic antidepressants in general) interact. I searched the following websites for more information on such interactions: [www.medscape.com](http://www.medscape.com); [www.fairlite.com/ocd/medications/elavil.shtml](http://www.fairlite.com/ocd/medications/elavil.shtml); and [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov). I also used the 1997 *Compendium of Pharmaceuticals and Specialties* and searched under the MeSH headings Adolescence; Antidepressive Agents, Tricyclic; Drug Interactions; Human; Male; Marijuana Smoking; and Nortriptyline.

Review of the literature did not show the possibility of such a rapid, sustained, and irreversible tachycardia as a result of an interaction between smoking marijuana and taking amitriptyline.<sup>1,2</sup> Apparently, tetrahydrocannabinol is metabolized by hepatic mitochondrial enzymes similar to those metabolizing tricyclic antidepressants. An interaction at the cytochrome system takes place, which results in a metabolism process by the hepatic microsomal system (P-450) that is the same for marijuana and amitriptyline.<sup>3,6</sup>

One previous report,<sup>2</sup> however, has highlighted delirium and cognitive changes and the serious cardiac consequences of interaction between these two drugs.

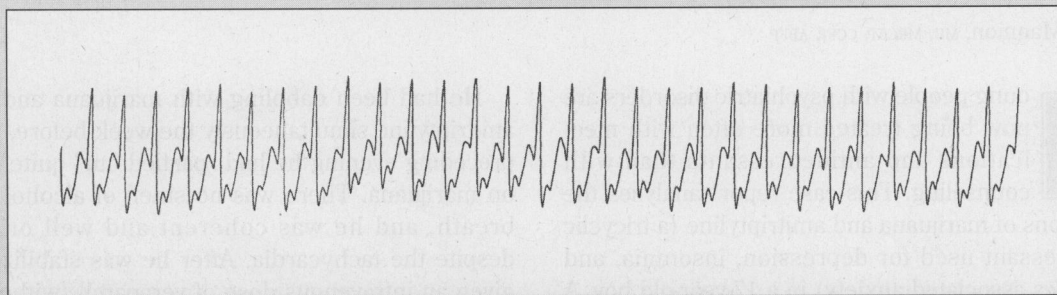
## Conclusion

A life-threatening sustained supraventricular arrhythmia is a possible consequence of taking tricyclic antidepressants and smoking marijuana. Caution should be exercised in treating insomnia and reactive depression with amitriptyline and other tricyclic antidepressants in adolescents who have a potential for drug abuse. If an adolescent patient taking a tricyclic antidepressant complains of a racing heartbeat,

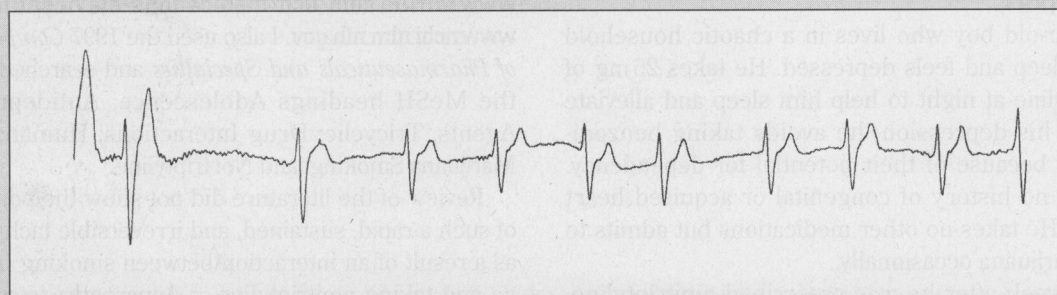
# CME


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**Figure 1.** Rhythm strip generated during patient's first admission to the emergency department



**Figure 2.** Rhythm strip generated after electroconversion



consider a connection between that and smoking marijuana (or other drug abuse) and be aware of a possibility that a life-threatening arrhythmia can develop from such an interaction. 

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